

for consuming opium. He was an inveterate poacher (much to my advantage as regards mammals) and I think knew as much of the Mishmi fauna as anyone in the district. From him and other Mishmis I often had requests to go up and shoot Takin. According to him these were to be found about two days trek from Chikorpani up towards the Headwaters of the Digaru River. The mountains here do not rise above 7,000 feet and if Takin were to be found at this elevation in April and May it is obvious that they come down much lower during the winter, as snow was lying on some of the inner ranges on the 21st April. I also heard of them on the range 6,000' which divides Dreyi from Theroliang, and about four miles northward along the spur I came across numerous tracks which I took to be of the Takin. Blyna also told me that he has shot the Takin at Doloipani in the country of the Meja Mishmis which lies on the route to Rima in Eastern Tibet. I had no time to spare to really go after these beasts as I was busy on most days with the smaller mammals but I have no doubt that with a certain amount of diligence they would be found to be commoner than is generally supposed, a theory which is helped in no small measure by the great difficulty of getting off the beaten track in the Mishmi Hills.

BOMBAY,
15th August 1923.

H. W. WELLS.

No. V.—NOTES ON PORCUPINES.

I have always found the porcupine an interesting animal in all the parts of Asia and Africa in which I have made my home from time to time. My first acquaintance with this nocturnal marauder was on the North-West Frontier of India, where it was very common in the precipitous valleys and clefts running through the barren hills of Waziristan. Many of these valleys were well watered and usually contained crops which our spiny friends would raid during the night. Military posts were frequently located in similar situations, and gardening was rendered well nigh impossible by the persistent attentions of these elusive thieves.

No walls or hedges could be made strong enough to keep them out: if traps were set at the gate-ways the porcupines tunnelled their way in beneath the massive stone walls: if snares were set at these holes, they came in at the gate-ways.

Occasionally one would get caught by the leg in a gin but it quickly solved the problem of its safety, by gnawing through the leg, and that is all we would find left in the trap when we visited it in the morning. I always hoped to remedy this by setting a group of traps, only to discover that they were scrupulously avoided.

It is readily admitted that the safest remedy is to attack these pests in their own homes, but there again we were completely thwarted in our endeavours.

These hill porcupines had their lairs dug deep into the cliffs which often towered hundreds of feet above the level of their earth.

To attempt to dig them out under such conditions was quite hopeless, to smoke them out or suffocate them with poisonous fumes was equally futile; as all the 'earths' were well ventilated with numerous inaccessible cracks and crannies.

All this was exasperating enough, but the final straw was the fact that there was a method by which there was a remote chance of getting even with these slippery customers, and that was by sitting up for them in the moonlight, and even then it was uncanny how the porcupines would be conspicuous by their absence on the nights that there was a watcher in the garden—this method however was denied to us.

Liberties such as sitting up in the moonlight in a garden outside the walls of the protecting fort, cannot be lightly undertaken on the Indian Frontier. For

we have to reckon with the raiding Mansud or the fanatical Ghazi—night prowlers of the worst type—ever watchful for the opportunity to loot and to slay; and their constant attentions practically make such night vigils quite impossible.

The scene now changes to the Chanda Jungles of the Central Provinces in India, recalling to me some of the happiest memories of successful shikar expeditions, and there I became better acquainted with porcupines and their habits as they were comparatively easy to tackle in those haunts.

I had always wanted to dig out an 'earth' and very conveniently found one in the heart of the jungle, at a time when my activities were perforce confined to quiet natural history work, as I did not want unnecessarily to disturb the countryside while I was waiting for a tiger to be lured into killing one of the baits I had put out for him.

My attention was first of all attracted to the 'earth' by a variety of animal skulls lying in its vicinity which the porcupines had been gnawing, and it was soon evident that the tenants were at home. There were two or three bolt holes near the mouth of the burrow but only one main tunnel, and before we commenced work we closed all the exits.

I had no intention of digging out the whole length of the 'earth' though I was very anxious to determine the general length, depth and size.

First of all with the aid of a stick about ten feet in length we tested the direction of the tunnel, and by tapping on its roof located a spot above ground to dig down to it.

The soil was soft and digging easy, and this procedure was repeated till the dwelling chamber of the animal was reached.

Each shaft that was sunk to the tunnel was about four feet in diameter and when completed the earth was blocked at that point, so that section by section we were gradually cornering its unfortunate inhabitants in the chamber at the end. I should like to mention at this point that, having from time to time dug out a good many porcupines in different countries and under very varied conditions, I have come to the conclusion that they rarely if ever dig out 'earths' of their own, but invariably appropriate those of other animals which they enlarge—if necessary—for their own use.

When tapping forward with the long stick after sinking the third shaft, evidently one of the porcupines was encountered, and a chattering noise and a distinct scampering was audible.

At the fourth shaft we had our first glimpse of the terrified creatures which made desperate, though fruitless, efforts to get out; and it is quite extraordinary the way in which I have sometimes seen these animals negotiate the banks of deep, steep shafts and temporarily escape.

In this instance I had no intention of letting them get out until I wanted them to, and when we broke into the tunnel at the fifth shaft and found ourselves at the entrance of the dwelling chamber, and end of the earth, the whole space below us appeared to be alive with porcupines.

Eventually we discovered two three-parts grown youngsters—both females—and a full grown pair, one of which contained a well formed youngster in the fetus state, about the size of a small rat. I found the youngsters exceedingly tasty and nice to eat, but the old animals, though providing rich and excellent eating, are apt to be a trifle strong, and I have not yet acquired the taste necessary to appreciate them. The earth was nearly sixty feet in length, and the chamber almost five feet below the level of the ground. The tunnel was just sufficiently large to admit of the passage of a full grown porcupine, but the animal could not turn round until it reached the chamber at the end.

This dwelling place cannot have been more than four square feet in area and probably averaged eighteen inches from its floor to the roof. It seemed to me very small compared to what it contained, but I always think the same about

every porcupine 'earth' when I eventually arrive at the end.

Dabbling in Natural History work during the Mesopotamian campaign next brought me into contact with this species near the Rivers Euphrates and Tigris in 1917 and 1918.

On the Euphrates I found their refuges near Feluja, due west of Baghdad, and amongst the ruins of the ancient Persian fortress of Anbar.

In the Tigris area I found them common in the cliffs of the Adhaim river, a few marches downstream of Samarra—in the high, steep banks of that huge monument of ancient irrigation works, the Nahrwan Canals, and amongst the rivers of Eski Baghdad in the vicinity of Samarra itself, where a succession of Caliphs each attempted to build a city which would outrival Baghdad, and all of whom failed in the attempt.

Amongst these rivers, in the majority of cases, their refuges were quite inaccessible, but I discovered one that offered a fair chance of success.

Digging was well nigh impossible as a great portion of the ruins were mixed up with a type of hard lime-stone conglomerate.

However, with the united efforts of nearly two dozen men working hard for a couple of days, the owners of the 'earth' were eventually captured; but they were so severely mauled in the process that they died at once. The female was the heavier of the pair and weighed 25 lbs., while the male only scaled 23 lbs.

This 'earth' was of natural formation amongst the hard, conglomerate blocks, was over thirty feet length and terminated in quite a roomy chamber also of nature's handiwork.

This species has not yet been fully identified nor named by the British Museum experts, and may prove to be something new.

In Palestine I knew of the existence of porcupines on the Jordan side of the Judea Hills, but failed ever to bring any to bag.

Finally, there are my East African experiences with these mischievous creatures, and I have previously, in an article in 'The Field' on the subject of small mammals in Kenya Colony, generally described their habits in that country but at that time had not had the good fortune to dig out a new habitat.

Most of the normal lairs are far too rocky to permit of the owners being dug out, but during the harvest season they temporarily occupy untenanted pig holes in the vicinity of the mealie fields, and are then quite easy to suffocate or capture. These pig holes when converted to their own use by the porcupines are rarely more than 20 feet in length, but the same porcupine or a pair will often have several such holes at their disposal.

(A dog however will at once decide whether the earth is occupied or not.)

The biggest specimen captured by this method was a fine female weighing considerably more than 30 lbs. The small path made by the porcupines through the long grass, when on their nightly raids to and from the mealie fields, tell their own story—for these animals always follow the same track. My dogs I find will hurl themselves again and again on to the cruel spines in a vain attempt to close with their formidable antagonist, though I always try to capture or kill my quarry before the dogs can get near it.

However, one large dog, who has been severely mauled by Monkeys and Wart Hog, has learnt the trick of attacking the head only, and when he sees the opportunity he usually bites it in half.

In Volume XXIX, No. 2, of the Society's Journal, there is a query as to the porcupine's method of attack.

I have previously written at length in the Journal a few years ago as to the method of attack from my own painful experience—and I can now further add to my observations by reason of frequent encounters with porcupines during recent years in Kenya Colony.

When the porcupine is attacked by dogs it does its best to keep its tail towards its tormenters, and to do this wheels from side to side with remarkable agility.

All the time the quills are kept erect, forming an extensive prickly shield, which when turned sharply in any direction acts as a sufficient barrier to prevent the dogs bringing home their attack.

Though the dogs hurl themselves time and again at the porcupine they always retire discomfited, but do little damage to themselves beyond superficial injuries from the cruel spikes, many of which are left embedded in their skins. But the porcupine does not take a passive part only in the proceedings, for when it sees its opportunity it hurls itself backwards with incredible rapidity and no mean force, backed up as it is with a weight often exceeding 30 pounds. Then it is that fatal injuries are inflicted with a bunch of short hard quills near the base of the animal's spine, and dogs frequently get pierced to the brain and killed when attacked in this fashion.

One of my dogs has now learnt the trick of disabling porcupines—as he waits till the animal is busily engaged with the rest of the pack, and then he rushes in and bites the porcupine on the head.

KENYA COLONY,
14th July, 1923.

C. R. S. PITMAN, MAJOR.

No. VI.—CHANGE OF COLOUR IN THE BLACKBUCK (*ANTILOPE CERVICAPRA*).

The correspondence in the *Field* on the subject of the colour change in the coat of the Black Buck is not without interest to sportsmen in India. We publish below the letter which appeared in the *Field*, together with the editor's comment. We are also able to include observations on the subject received from members and would welcome further opinion:—

“In the *Field* of May 24th there is a note about an abnormal black buck horn. You comment on this and state: ‘The black is merely a transient phase assumed by the black buck during the breeding season.’ I hesitate to join issue with the editor of the *Field*, but this not the usually accepted belief in India. All young buck are fawn-coloured like the does and gradually assume their black coats. Some, however, never seem to turn black at all. I was always told that the black colour is a sign of maturity. Certainly there are buck which remain black all the year round. I have been out in India over 20 years, and never once heard the suggestion that buck only assumed their black coat as certain birds assume their breeding plumage.”

M. H. SIMMONDS (MAJOR, INDIAN CAVALRY).

Berkshire Club, Reading.

[“Horns are abnormally developed now and again in the females of species of antelopes in which the male alone is typically provided with these appendages. There is a skull of a female black buck in the Natural History Museum with a pair of down-curved horns. It formerly belonged to Mr. A. O. Hume. The testimony of sportsmen as to the sex of the game they shoot must be accepted, especially when there is no likelihood of error. The probability of the colour-change of the male black buck being seasonal was suggested by the late Mr. Lydekker in 1907 (*Game Animals of India*) and was subsequently confirmed by Mr. Pocock from observations on a living animal in 1910. (*Proceedings of the Zoological Society*, 1910, p. 895). Mr. Pocock informs us that he has subsequently observed the same phenomenon in other specimens. It is quite possible, however, that in some cases the colour-change is permanent-